

## PROLEC-r – Evaluation of Processes of Reading. Proposal for a Computerized Version

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### Abstract

*As we are to adapt, to Portugal (in press, Lisbon: Cegoc), the PROLEC-R [Cuetos, Rodriguez & Arribas (2009). Madrid: TEA Ediciones], a battery of evaluation of reading to children from 6-12 years, and for reasons that expose below, suggest a computerized version. Version from the Vienna test system – VTS, or even from a composition of on other hardware.*

*The reasons are, on the one hand, directly with the capability to contribute to the validation of battery itself, and with the targets of evaluation, children. In fact, there are numerous advantages and potential of informatics, including modernization of psychometrics. There are many advantages of computerized psychometrics, which will be explored.*

*The prolec-r is a fairly complete battery, which includes four fundamental processes for analysis of readability [I. identification of letters (tests: 1. name or sounds of letters, 2. Equal-different), II. Lexical processes (tests: 3. read words; 4. read no words), III. Syntactic processes (tests: 5 grammatical structures. 6. punctuation), IV. Semantic processes (tests: 7. Comprehension of sentences; 8. Understanding of texts and 9. Oral comprehension), from various tests and multiple items.*

*From the Portuguese version, on paper, computerized version is designed to be administered also to children from 6/7 to 12 years of age in number 1200, distributed equitably, by sex, region of residence (North, Central, South and Islands, interior and coast) and school type (public, private). Note that this is a battery with proven validity, as we can see the numerous citations in the bibliography of specialty.*

### Introduction

Reading is consensually considered an essential activity for personal and social development, providing access to culture and knowledge in general [1]. Being able to read is the most important step for all further knowledge. Without a good understanding of development of other knowledge that is read can be compromised [2]. Still, Sim-Sim and Viana [3] have reported a shortage of national indicators which establish benchmarks in reading performance that covers the detailed indication of descriptors of reading skill and prior establishment of criteria for the creation of standardized assessment measures. They emphasize the need to implement measures to evaluate a representative sample of target population and validity studies on these measures. The definition of benchmarks without the existence of reliable measures of psychometric assessment and validated nationally, to consider the benchmarks of learning pre-defined, may not be reliable. However, you can find some tools that are validated and marketed, or in the process of investigation in Portugal. Briefly, we refer to proof Word Recognition - PRP [7]), the Test Reading Age - TIL [4], the Reading Assessment Battery in European Portuguese - Aleppo [4], or even in study phase, the Assessment Battery of Aphasia Examination Psycholinguistics and other disorders of Portuguese Language Population - PAL-PORT [6], among others.

However, we emphasize that whether or not such instruments are validated for the Portuguese population, or are not sufficiently advertised or not perform an overall assessment, it is not comprehensive in all aspects involving the private performance in reading [3]. And there aren't in computerized format.

In this sense, taking into account the needs assessment process involved in reading, it is intended with this work propose a reading assessment tool that allows an overall assessment of main processes involved in it. Thus, in order to meet the above requirements, it is proposed to provide a battery for the Evaluation of Reading Processes for Children - Revised Edition (PROLEC-R), Cuetos, Rodriguez Arribas and Ruano [5]. It is a battery of tests, Spanish, exploring the processes involved in reading, namely the lexical, syntactic and semantic. In other words, this text intends to account, in summary form, the Battery for the Evaluation of Reading Processes, Journal - PROLEC-R criteria for translation and validation phases, such as contributions and important steps for its measurement. According to the above, we present the proposal for further studies to evaluate this instrument for the Portuguese population, in order to meet the need for a comprehensive assessment of reading skills. This instrument can bring added value to the assessment of reading skills in first and 2nd cycles of basic education.

According Cuetos et al. [5], the PROLEC intended to evaluate the performance in reading, allowing you to investigate the processes that underlie the complex process of reading, to further guide appropriate intervention programs.

The PROLEC-R is a validated instrument in Spain, with a sample of 920 subjects distributed equally by children of both sexes, from 1st to 6th year of primary school, aged 6 to 12 years. The collection of data covering most of districts of Spain, having just obtained an AIDS representativeness of population of Spanish children [5].

## Method

The battery of tests PROLEC-R [8] Battery evaluation of processes of read-magazine (PROLEC-R), revised edition of Cuetos, Rodriguez Arribas and Ruano [5] was developed from a first version 1996, now improved, encompassing basic education from 1st to 6th grade. Modifications have been introduced, incorporating the knowledge corresponding to the age of acquisition from 6 to 11/12 years. The revised edition includes evidence of effecting a crossover hit with the time taken to carry out some tests. With this criterion, the authors intend to discriminate against children who have reading problems that have marked those severe difficulties.

The version presented here refers to the trial, unpublished, Figueira, Lopes and Almeida [8]. Concomitantly, the versions were sent to the original authors for comment. After this phase, the research team will make the changes deemed necessary and indispensable. The final version of Portuguese translation of R-PROLEC result of this process. Note that all tests are scored 0-1, if the child hit or miss items from different tests.

Let us, for now, to describe the criteria for translation of evidence, beginning with the perceptual process.

Identification of letters in the group, a test. Name or the sounds of letters consists of 23 letters of alphabet, which serve as a third example, and are vowels, and the other 20 are timed. The aim is to verify that the child recognizes all the letters or the accompanying sound (see Table).

Table: Structure of battery of tests PROLEC-R

process	tests
I - Identification of letters	1. Identification of letters
	2. Same-Different
II - Lexical processes	3. words reading
	4. no-words reading
III – Syntactics processes	5. Grammatical structures
	6. Punctuation
IV – Semantics processes	7. Comprehension of sentences
	8. Text comprehension
	9. Listening

The test 2. Same-Different consists of 20 pairs of words and pseudo words, in which 10 pairs are equal and 10 are different. The objective relates to the ability to target and identify the letters that make words. With the evaluation of time you can see if the child makes a logographic reading, or has attention problems (see Table).

As for the lexical processes, the test 3. Reading words is a list of 40 words with syllabic structure variable, ranging also on the length and frequency. On the count of phonetic syllables, we consider short words with two syllables and the long words that have three or more syllables. Based on CORLEX, the frequency, the test contains 13 very common words, 14 words of average frequency and 13 infrequent words. With regard to syllable structure, presents for the first syllable structures with different complexity by combining vowels (V) and consonants (C), with the following: CV, VC, CVC, CCV, CVV. Results may vary therefore between 0 and 40, taking into account the time of reading (see Table).

The test 4. Reading pseudo words consists of a list of 40 pseudo words and timed as above, with the aim of assessing the ability of child has in reading nonsense words (see Table).

Syntactic processes in the group, proof 5. Grammatical structures aims to assess the reader's ability to perform syntactic processing of sentences with different grammatical structures. The test consists of 16 sentences, each with four associated images, in which only one corresponds to the contents of phrase, functioning as distracting the other grammatical forms are distributed equally between the structures: Active, Passive, and Relative Complement Focused Duplicate (cf. Table).

The battery includes a test score, race 6. Punctuation, in which a text is presented and timed reading time. Implies a reference to 11 punctuation marks, which sometimes are repeated, as follows: 4 points, a comma, exclamation points and three 3 mark (see Table).

The fourth group of tests evaluates the semantic processes. One of proofs of this group is test 7. Understanding of sentences, consisting of 16 sentences, of which the first three refer to the realization of simple instructions, being evaluated for compliance with the required action. The following three sentences require the performance of simple designs, others refer to the three little retouching or execution of designs submitted in addition, three other request indications, they are presented three drawings, from which the child has to indicate which corresponds to sentence. The last four are locative sentences, the child must indicate which of four pictures corresponding to words written (see Table).

The test 8. Text comprehension is composed of four texts, two shorter and two longer, of two types: narrative and expository (Carlos, Birthday Marisa, Okapis, The Indians Apaches), more content

(Carlos, Marisa's Birthday) and nothing or unfamiliar (Okapis the Apaches and the Indians), in which children read texts and then answer four questions about each one. This race has not changed, apart from the procedures and criteria for translation (see Table).

Finally, the test 9. Listening is composed of two expository texts, one shorter (the Ratel) and one longer (The Vikings), both with unfamiliar content, in which the examiner must read slowly and clearly, the child listens attentively and must answer four questions about each text. Also, this proof has not changed, apart from the procedures and criteria for translation (see Table).

### **Brief concluding remarks**

This paper attempts to present and shape, so necessarily brief, the Portuguese version of research PROLEC-R. The battery appears as a possible tool to identify processes of reading and know which areas require intervention. Being an instrument translated from Spanish, requires pilot studies to evaluate the instrument and recognition of its psychometric qualities for the Portuguese population.

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